SECTION 736 – HIGHWAY AND SIGN LIGHTING

736-2.03 Load Center Cabinets: of the Standard Specifications is modified to add:

(A) Uninterruptible Power Supply (UPS):

(1) Description:

An Uninterruptible Power Supply (UPS) battery backup system shall be furnished and installed by the contractor in accordance with the project plans and these specifications.

The UPS system shall protect the 120 volt circuits supporting the traffic signal controller, controller cabinet, traffic signal faces and pedestrian faces. The UPS system is not intended to support any safety lighting or sign lighting unless otherwise specified on the project plans.

(2) Materials:

The UPS system shall consist of a UL-listed UPS controller unit, manufacturer recommended batteries of sufficient amp-hour ratings to support the specified load and operating duration, manual bypass switch, and manufacturer specified surge protection devices.

The UPS system may be contained in a separate cabinet on a foundation or may be combined in a single cabinet containing the meter pedestal components and UPS system components, as designated on the project plans.

The following includes manufacturers of UPS systems that have been tested and pre-approved by the Department per the Arizona Department of Transportation Standard Specifications for Road and Bridge Construction:

UPS system in separate stand-alone cabinet:

Alpha Technologies
3767 Alpha Way
Bellingham, Wa. 98226
(360) 647-2360
www.alpha.com

Dimensions Unlimited
4467 White Bear Parkway
St. Paul, Mn. 55110-7626
(800) 553-6418
www.dimensionsunlimited.com

UPS system in combined UPS/meter pedestal cabinet:

US Traffic Corporation
9603 John Street
Santa Fe Springs, Ca. 90670
(800) 733-7872
www.ustraffic.net

TESCO Controls Inc.
3409 52nd Avenue
P.O. Box 239012
Sacramento, Ca. 95823-9012
(916) 395-8800
www.tescocontrols.com

The contractor shall verify that the specific proposed UPS equipment models are approved by the Department. Products or models not specifically pre-approved by the Department or other than those listed above, must be approved by the Department prior to use.

The contractor is responsible for obtaining approval of the specific UPS equipment models and cabinets from the utility company providing electrical service, when utilizing a combined UPS/meter pedestal cabinet.

(3) Cabinet

The cabinet shall be steel and of tamperproof construction with piano-hinged doors and provisions for padlocks. The housing shall be of a NEMA 3R weather resistant construction. There shall be no exposed nuts, bolts, screws, rivets or other fasteners on the exterior of the enclosure.

The cabinet shall be treated on the inside and outside with one coat of primer paint and painted two coats of aluminum paint, conforming to the requirements of Section 1002.

Stand-alone and combination UPS/meter pedestal cabinets shall be furnished with cast-in-place concrete foundations of a size and dimensions as specified by the manufacturer.

A maintenance pad of the same width as the cabinet foundation, four inches in thickness, and extending a minimum of 36 inches out from the face of the cabinet shall be provided.

Conduits in the foundation shall be as specified on the project plans.

Exact location and orientation of the cabinet shall be field determined by the Engineer.

The UPS system cabinet shall not be attached to the traffic signal controller cabinet, and shall be located a minimum of five feet from any other cabinet, wall, fence or other physical obstruction.

(4) UPS Controller Unit:

The UPS controller unit shall provide sufficient output power to support the quantity and wattage of traffic signal and pedestrian faces shown on the project plans, but in no case less than 700 watts.

The UPS controller unit shall have an operating temperature of –40 degrees C to +74 degrees C.

The UPS controller unit shall be capable of providing serial communications. Serial communications shall be through an RS232 serial port. The contractor shall furnish and install a serial cable, unspliced, from the UPS controller unit to the traffic signal controller cabinet, allowing ten feet of cable in the controller cabinet for future termination by the Department. The cabinet end of the serial cable shall be furnished with spade connectors connected to each wire within the serial cable.

The UPS system shall have a manual bypass switch for maintenance or servicing purposes without affecting continuous power output to the traffic signal controller, or tripping the conflict monitor/malfunction management unit.

(5) Batteries

Batteries shall be of sufficient amp-hour ratings to support the quantity and wattage of traffic signal and pedestrian faces shown on the project plans, but in no case less than 700 watts in an operating mode that supports full cycling and operation of the traffic signals for a minimum of four hours, followed by operation in a flashing mode of an additional minimum of four hours. The contractor shall furnish calculations or other supporting documentation bearing evidence that the proposed batteries will meet or exceed this provision.

The batteries shall be completely sealed and maintenance-free. Batteries shall be Absorbed Glass Mat/Valve Regulated Lead Acid (AGM/VRLA) or Gel type.

Batteries shall have terminal covers to protect from accidental contact with metallic terminal components.

UPS units in the Flagstaff, Prescott, Kingman, Globe and Holbrook Districts shall be furnished with a battery heater mat or equivalent method for keeping battery temperatures within operating range.

736-4 METHOD OF MEASUREMENT: of the Standard Specifications is modified to add:

Uninterruptible Power Supply (UPS) battery backup systems will be measured as a unit for each type of cabinet furnished and installed.

736-5 BASIS OF PAYMENT: of the Standard Specifications is modified to add:

The accepted quantities of Uninterruptible Power Supply (UPS) battery backup systems, measured as provided above, will be paid for at the contract unit price each, for furnishing, assembling, installing and testing Uninterruptible Power Supply (UPS) battery backup systems, which price shall be full compensation for the work, complete in place, as described and specified herein and on the project plans, including cabinets, foundations, conduit, elbows, anchor bolts, maintenance pad, UPS controller unit, serial cable, surge protection devices, batteries and all other components necessary to provide a complete functional UPS system for controlling the operation of traffic control signals for the time periods and in the manner specified herein.